Korolite® Expanded Polystyrene (EPS) Insulation

Product Description

Korolite® Expanded Polystyrene (EPS) is a high-performance, closed cell, rigid foam insulation material that uses air as main ingredient. EPS insulation resists moisture and mold/fungi growth with low environmental impacts, high & stable Long-Term Thermal Resistance, and good drying potential over the long service lives of buildings. Korolite® EPS is used in many residential and commercial construction applications such as such as wall, roof and below-grade insulation including under slabs.

Sizes

Common widths and lengths are 2'x8', 4'x4' and 4'x8' [0.61m x 2.44m, 1.22m x 1.22m and 1.22m x 2.44m] but can be custom ordered in any size to meet your project specifications.
Common thicknesses are: 1", 1.5", 2", 2.5", 3", 4", 5" and 6" [25.4mm, 38.1mm, 50.8mm, 63.5mm, 76.2mm, 101.6mm, 127mm and 152.4mm] but can be custom ordered in any size, including factory-tapered, to meet your project specifications.

Manufacturer

Airfoam Industries Ltd.
19402 - 56 Ave, Surrey BC V3S 6K4 Canada
800.663.8162 or 604.534.8626 | www.airfoam.com

Code Compliance

Refer to Airfoam's Code Compliance Research Report CCRR-0379 at www.airfoam.com/Airfoam-Code-Report-CCRR-0379.pdf
Korolite® EPS insulation is Thermal Insulation with Surface Burning Characteristics. Most Korolite® Types comply with:

- Canada: CAN/ULC-S701.1, CAN/ULC-S102.2
- USA: ASTM C578, ICC-ES AC12, ASTM E84 (UL 723)

Material Properties

Korolite® EPS Insulation products exhibit the typical physical properties indicated below when tested as represented.
Detailed 10-part specification sheets for each Korolite® Type are available at www.korolite.com.

Korolite® EPS Insulation - Material Properties

Property[1]	Units	Korolite® Types								Test Standard
		K100	K130	K160	K200	K250	K300	K400	K600	
Third Party Certified Type	Canada	1	1+	2	2+	3				CAN/ULC-S701
	USA	I	VIII	II	II+	IX		XIV	XV	ASTM C578
Compressive Resistance[2]	psi	10	13	16	20	25	30	40	60	ASTM D1621 Proc.A
Minimum @ 10% Deformation	kPa	70	90	110	140	172	207	276	414	
Thermal Resistance[3,4] Minimum @ 24°C [75°F]										
R-Value / inch thickness	ft²•hr•°F/(BTU•in)	3.75	3.8	4.04	4.1	4.27	4.27	4.27	4.3	ASTM C518
RSI / 25mm thickness	m²•°C/(W•25mm)	0.65	0.66	0.70	0.71	0.74	0.74	0.74	0.75	
Flexural Strength Minimum	psi	25	30	35	40	50	51	60	75	ASTM C203 Proc. B
	kPa	172	208	240	280	345	352	414	517	
Water Vapor Permeance[4] Maximum @ 1" [25.4mm] thickness	perms	5.0	3.5	3.5	3.3	2.3	2.3	2.3	2.3	ASTM E96 desiccant
	ng/(Pa•s•m²)	287	201	201	190	132	132	132	132	
Water Absorption[5] Maximum	% by volume USA	4	3	3	3	2	2	2	2	ASTM C272, 1 Day
	% by volume Canada	6	6	4	4	2	2			ASTM D2842, 4 Days
Density	Nominal[6] lbs/ft³	1	1 ¼	1½	1.65	2	2.15	2½	3	ASTM C303 or D1622
	Minimum kg/m³	14.4	18.4	21.6	24	28.8	32	38.4	48	
Dimensional Stability	% linear change max.	1.5								ASTM D2126, 7 Days @ 70±2°C
Additional Thermal Resistance Information[3,4,6]										
Typical R-value per inch [25.4mm] @ 25°F	ft²•hr•°F/(BTU•in)	4.2	4.4	4.6	4.6	4.8	4.8	4.8	4.8	ASTM C518 or C177
@ 40°F	ft²•hr•°F/ (BTU•in)	4.0	4.2	4.4	4.4	4.6	4.6	4.6	4.6	

[1] The test methods used to determine the material properties provide a means of comparing different cellular plastic thermal insulations. They are intended for use in specifications, product evaluations and quality control, but they are not intended to predict end-use product performance.
[2] The elastic limit is between 1% and 2% strain. Compressive resistances at 10% strain are provided for applications where the intended end-use can tolerate plastic (permanent) deformation under load.
[3] R means resistance to heat flow. The higher the R-value, the greater the insulating power.
[4] Values are for 1 inch or 25mm thick samples with natural skins intact. Better values will result for thicker materials.
[5] The lab-test methods for water absorption use complete submersion under a head of water for 24 or 96 hours, so the values are applicable to specific design requirements only when the end-use conditions are similar to test method requirements.
[6] Not part of all the industry consensus standards (ASTM C578, CAN/ULC-S701) and provided AS-IS solely for informational purposes.

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Korolite® EPS Insulation Technical Summary

Fire Characteristics

- Limiting Oxygen Index: min. 24% per ASTM D2863. Airfoam's EPS for construction applications contains a polymeric (non-HBCD) fire retardant modifier.

Surface Burning Characteristics

- **Canada**: CAN/ULC-S102.2: Flame-Spread Rating ≤290, Smoke Developed Classification over 500.
- **USA**: ASTM E84 (UL 723)[a]: Flame Spread Index ≤25, Smoke-Developed Index ≤450 up to 6" thick.

[a] Ceiling measurement only, conducted through determination of flame spread index and smoke developed index with the removal of any contribution of molten materials ignited on the floor of the Steiner tunnel.

Fire Protection

CAUTION: This product is combustible. Keep away from high heat and ignition sources. A protective barrier or a thermal barrier is required as specified in the appropriate building code.
¾ Hour Fire Rating for a Composite Wall Assembly with EPS c.i. (Continuous Insulation) per **CAN/ULC-S101**, **ASTM E119,** see Design No. CPIA/CWP 45-01.
Meets **NFPA 285** with specific limitations for an exterior wall assembly. For more information consult Airfoam's CCRR-0379 at www.airfoam.com/Airfoam-Code-Report-CCRR-0379.pdf, your engineer, local building department or call Airfoam at 800.663.8162.

Environment Data

EPS has much lower environmental impacts than most other foam plastic insulation materials. The **Environmental Product Declaration** (EPD) has been certified by UL Environment and is available on www.airfoam.com.
Korolite® EPS insulation may contain up to 30% pre-consumer recycled content or can be ordered without recycled content for EIFS/Stucco applications.
Korolite® EPS insulation **resists mold & fungi growth** per ASTM C1338 and has no nutritional value for insects. To protect against termites place adequate physical barriers such as membranes around below-grade EPS.

Max. service temperature: Long-Term Exposure 75°C [167°F], Intermittent Exposure 80°C [176°F]

Thermal expansion coefficient: 5-7 • 10^{-5}/°K

Capillarity: None.

Solubility & Incompatibility

Insoluble in water and in general chemically inert. EPS dissolves in hydrocarbons (e.g. fuels, oils, tar), organic solvents (e.g. acetone/ketones, benzene, paint thinner), ethers, esters, aldehydes and amines.

Installation

Follow the Installation Guide for Korolite® Expanded Polystyrene (EPS) Rigid Insulation available at www.airfoam.com.

Install Korolite® insulation in compliance with all applicable building codes. Korolite® insulation is easy to handle and install and can be cut with a utility knife or any sharp blade. Butt edges and ends tightly to adjacent EPS boards. Ensure compatibility of any other product (such as adhesives, tapes, coatings or finishes) with Expanded Polystyrene. Korolite® Rigid Foam Insulation is a non-structural material. Korolite® insulation shall only be placed into an assembly where the moisture transport mechanisms are well understood and determined to be acceptable in accordance with accepted engineering practice (e.g. current ASHRAE Handbook of Fundamentals).

For safe handling and storage information refer to the Safety Data Sheet (SDS) at www.airfoam.com/SDS.pdf or request a printed copy.

GHS Classification: Non-Hazardous.

UV-light surface degradation: white EPS can be exposed to direct sunlight for a few weeks. Prolonged exposure to ultraviolet light creates a yellow dust on the surface of EPS products which has negligible impact on the products' properties but may require removal before adhering other materials such as stucco or self-adhesive membranes.

Availability

Korolite® EPS insulation is supplied from Surrey BC through our extensive distribution network. For product availability or to get in touch with your local distributor, call Airfoam at 800.663.8162 or +1.604.534.8626.

Warranty

Airfoam offers a **30-year limited warranty** for Korolite EPS Insulation **including retention of 100% of its R-value**. See www.airfoam.com/Korolite-Insulation-30-Year-Limited-Warranty.pdf and www.airfoam.com/terms for Terms and Conditions of Sale.

Maintenance

No maintenance is required in normal use. EPS insulation that became wet can be dried out within reasonable times per ASTM C1512 tests using adequate drainage and/or ventilation.

Recycling

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Expanded Polystyrene (EPS) can be recycled for reuse in a variety of different applications, from construction and landscaping to packaging and park benches. Airfoam Industries Ltd. is a registered Recycling Facility for EPS materials accepting recyclable #6 white Expanded Polystyrene (EPS) from our customers - free of charge, if it is clean, dry, and not mixed with any other materials.

Technical Services

Airfoam can provide technical information and support to help address questions when using Korolite® EPS insulation. Technical personnel are available to assist with any insulation project. For technical assistance, contact Airfoam at:
Online: www.airfoam.com/EPS-Insulation-Support.php
Phone: 800.663.8162 or +1.604.534.8626
Fax: +1.604.534.1212

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Please contact us for a free estimate or additional information.